

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of all claims in the application.

Listing of Claims

1. **(Currently amended)** An apparatus for performing biological reactions on a substrate surface, the apparatus comprising the following components:

- (a) a biochip comprising:
 - (i) a substrate; and
 - ~~a plurality of~~ (ii) an array[[s]] of biologically reactive sites on said substrate; and
 - (iii) a base plate; and
- (b) a gasket affixed between the biochip and the base plate, said gasket defining a plurality of reaction chamber[[s]] about said array;
- (c) a first port for introducing a fluid sample into said reaction chamber;
- (d) a second port for allowing air to escape from said reaction chamber;
- (e) a pump configured to mix and pressurize said fluid sample in said reaction chamber;
- and
- (f) a third port configured to interface said pump with said reaction chamber.

2-4. **(Canceled).**

5. **(Currently amended)** An apparatus according to claim 1, wherein ~~at least one of the plurality of~~ said array[[s]] of biologically reactive sites comprises oligonucleotide probes.

6. **(Currently amended)** An apparatus according to claim 1, further comprising a heating element positioned to heat ~~at least one~~ said reaction chamber.

7. **(Currently amended)** An apparatus for performing biological reactions on a substrate layer comprising:

- a substrate having a first surface containing a plurality of biologically reactive sites disposed thereon;
- a base plate having a first surface and a second surface, wherein the first surface further comprises a cavity comprising one or a plurality of well structures;

a sealing member disposed in each well structure, wherein each sealing member defines a reaction chamber between the surface of the substrate layer containing the biologically reactive sites and the first surface of the base plate; ~~and~~
a pump configured to mix and pressurize a fluid sample in at least one reaction chamber; and
~~a fluid port connected to~~ configured to interface said pump with at least one of said at least one reaction chambers.

8. (Canceled)

9. (Previously presented) An apparatus according to claim 7, wherein at least one of the biologically reactive sites comprise oligonucleotide probes.

10. (Previously presented) An apparatus according to claim 7, further comprising a heating element positioned to heat at least one reaction chamber.

11. (New) The apparatus of claim 1 further comprising at least one sealing or compliance member.

12. (New) The apparatus of claim 11 wherein at least one of said gasket or optional sealing or compliance members comprises at least one material selected from the group consisting of fluorinated ethylene propylene, silicone rubber, nitrile, neoprene rubber, sponge rubber, pressure sensitive adhesive, acetal resin, polyurethane, polypropylene, acrylonitrile-butadiene-styrene, and inert metal oxide.

13. (New) The apparatus of claim 12 wherein said gasket comprises a material selected from the group consisting of fluorinated ethylene propylene and silicone.

14. (New) The apparatus of claim 13 wherein said material is fluorinated ethylene propylene.

15. (New) The apparatus of claim 13 further comprising a pressure sensitive adhesive.

16. (New) The apparatus of claim 14 further comprising a pressure sensitive adhesive.

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17. **(New)** The apparatus of claim 7 wherein said gasket comprises a material selected from the group consisting of fluorinated ethylene propylene and silicone.

18. **(New)** The apparatus of claim 17 wherein said material is fluorinated ethylene propylene.

19. **(New)** The apparatus of claim 17 further comprising a pressure sensitive adhesive.

20. **(New)** The apparatus of claim 18 further comprising a pressure sensitive adhesive.

21. **(New)** The apparatus of claim 1 further comprising a pressure sensitive adhesive.

22. **(New)** The apparatus of claim 7 further comprising a pressure sensitive adhesive.